REMARKS/ARGUMENTS

The present invention involves a surface-modified silica powder that is suitable for use as an ink acceptor layer in printing processes. The surface-modified silica has a high absorbing ability for an anion source compound and is obtained by a surface treatment process of a fumed-silica product and has an adsorption amount of an anion source compound to the surface-treated silica that is more than 150% of that of the original silica before the surface-treatment.

The presently claimed composition has not been described or suggested by the cited references.

Applicants note that Claims 13-20 are currently pending in the application. Applicants direct the Examiner to the preliminary amendment filed March 22, 2002.

The rejection of Claims 13-18 under 35 U.S.C. § 102(b) over JP 58-185405 (JP '405) is respectfully traversed.

Applicants direct the Examiner to the attached partial translation of JP '405 which lists Example 1 of JP '405. JP '405 describes a silica powder containing an aminosilane compound and a hydrophobic group on its surface. The aminosilane compound is added to the silica in an ethanolic solution and then is heated to 110 °C to dry. Next a hexane/hexamethylsilazane solution is added to the silica powder and the mixture heated to 150 °C to form the final product. The hexamethylsilazane is added to make the resulting silica powder hydrophobic. Hydrophobic silica products are generally not dispersible in an aqueous solution.

The presently claimed silica powder is prepared by dry-process (nitrogen atmosphere) treatment of fumed silica powder with an agent containing an amino group. The resulting powder product is then heated to 200 °C. These process conditions lead to the claimed properties and neither the claimed process nor product properties are described in JP '405.

The overall process of the presently claimed invention gives a hydrophilic silica with the claimed adsorption amount of the anion source compound. (See Example 1 of the specification).

Applicants note that the adsorption amount of the anion source compound is measured by dispersing the silica into an aqueous media containing the anion source compound. (See the Measuring absorption amount section on page 16 of the specification). The hydrophobic silica of JP '405 is not readily dispersible in an aqueous media, and therefore, cannot readily absorb compounds (sulfonates and carboxylates) dissolved in an aqueous solution. Overall, the products of JP '405 are prepared differently and have different properties than the presently claimed composition. Therefore, the claimed product properties cannot be inherent in the products of JP '405.

Because the products in JP '405 do not inherently have the same properties as those of the claimed products, the claimed product cannot be anticipated by JP '405. Therefore, Applicants respectfully request that the Examiner withdraw the rejection of Claims 13-18 under 35 U.S.C. § 102(b) over JP '405.

The rejection of Claims 13-20 under 35 U.S.C. § 103(a) over JP 62-178384 (JP '384) is respectfully traversed.

Applicants direct the Examiner to the attached partial translation of JP '385 which lists Example 1 of JP '384. JP '384 describes a silica treated with an aminosilane. JP '384 exemplifies non-fumed synthetic silica and an aqueous process for adding the aminosilane followed by treatment of the resulting powder at 105°C.

As noted above, the presently claimed product comprises a fumed-silica powder that has been treated with an agent containing an amino group under dry-process nitrogen atmosphere conditions. The powder product is heated to at least 200°C with stirring to form the final product.

Applicants note that to establish a case of obviousness there must be some suggestion or motivation to modify the reference or to combine reference teachings, there must be a reasonable expectation of success and the reference must teach or suggest all the claim limitations (M.P.E.P. § 2143).

There is no suggestion or teaching in JP '384 to prepare a silica powder by the process as claimed. For example, there is no suggestion or motivation found in JP '384 to use fumed silica. Synthetic silica products exemplified in JP '384 are chemically different than fumed silica products. For example, the amount of internal and surface hydroxyl groups are typically much lower in fumed silica products. This chemical difference leads to different physical properties of the silica products and results in the use of these different silica products in different applications. Selection of a given silica product depends upon these differences. A silica product suitable for one purpose may not be suitable for another. Since synthetic (non-fumed) silica was chosen in JP '384 for a particular purpose, it would not be obvious to choose a fumed silica because fumed silica may not suit the needs required for the desired product in JP '384. Because silica properties vary, there is no motivation found in JP '384 to use fumed silica.

As noted above, there is no suggestion found in JP '384 that fumed silica could be successfully used in the process described in JP '384 to arrive at the presently claimed product. Even if fumed silica was added to the process described in JP '384, there is no expectation that it will give a silica powder product with the claimed absorption properties because the claimed process conditions of the presently claimed invention are different than the process conditions described in JP '384.

JP '384 does not teach or suggest all the claim limitations of the claimed silica powder product. As noted above, JP '384 does not suggest the use of fumed silica nor does JP '384 suggest a dry-process treatment of an agent containing an amino group onto the silica

with a treatment temperature of at least 200°C. There is no suggestion in JP '385 that the process described in JP '385 will give a silica product with the presently claimed absorption properties. Therefore, JP '385 fails to teach or suggest all the claim limitations.

Overall, there is no suggestion or motivation found in JP '384 to modify the reference to arrive at the presently claimed silica powder, there is no reasonable expectation that the silica exemplified in JP '384 will successfully give the claimed absorption properties and the reference fails to teach or suggest all the claim limitations of the presently claimed silica product.

Therefore, the presently claimed silica powder is not obvious over JP '384, and accordingly, Applicants respectfully request that the Examiner withdraw the rejection.

The rejection of Claims 13-20 under 35 U.S.C. § 103(a) over JP '405 in view of JP '384 or JP '385 in view of JP '405 is respectfully traversed.

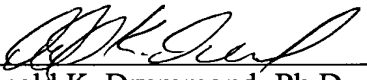
The discussions above for JP '384 and JP '405 are applicable here.

As noted above, the product described in JP '405 is hydrophobic not hydrophilic and as such, cannot give the claim absorption properties. Therefore, the combination of JP '405 with JP '384 cannot give the claim silica powder product. The combination of the cited references fail to teach or suggest all the claim limitations of the presently claimed silica powder product, therefore, the presently claimed invention cannot be obvious over a combination of the cited references. Accordingly, Applicants respectfully request that the Examiner withdraw the rejection.

In light of the above remarks contained herein, Applicants respectfully submit that the present application is now in condition for allowance. Favorable reconsideration is respectfully requested.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, P.C.
Norman F. Oblon



Donald K. Drummond, Ph.D.
Registration No. 52,834

Customer Number
22850

Tel: (703) 413-3000
Fax: (703) 413 -2220
(OSMMN 06/04)
DKD:aps

Example 1 OF JP'384

X parts of silane coupling agent (as shown in Table 1) to 100 parts of silica was added to the slurry dispersing silica in water, and after stirring 10 minutes, a heat drying treatment of said slurry was performed under the condition at 105℃ for 1.5 hours and then surface-treated silica is obtained.

As a base material, a general high quality paper (Trade name "GINKAN": weighing 60 g/m2 made by Sanyo-Kokusaku Pulp Co., Ltd.) having 35 seconds of sizing test value based on JISP8122 was used, and onto this base material, the coating liquid having the following composition was coated by using a blade coater, adjusting to 10 g/m2 of dried coated amount, and then after drying by general means, a recording material of this invention was obtained.

Synthetic silica (Made by FUJI-DAVISON CHEMICAL CO., Siloid74, Specific surface area 300 g/m^2)	100 parts
Silane coupling agent	X parts
Poly-vinyl alcohol (Made by Kuraray Co., Ltd., PVA117)	50parts
Water	400parts

(Later descriptions are omitted)

Table 1

Silane coupling agent	Adding amount (X parts)	Light fastness (⊿Eab*)
.....	-----	24.2 (Comparative)
γ-aminopropyltrimethoxy silane (Made by Nippon Unicar Co., LTD., A-1110)	0.2	18.6 (Example)
γ-aminopropyltrimethoxy silane (Made by Nippon Unicar Co., LTD., A-1110)	1	12.3 (Example)
γ-aminopropyltrimethoxy silane (Made by Nippon Unicar Co., LTD., A-1110)	5	9.6 (Example)
γ-aminopropyltrimethoxy silane (Made by Nippon Unicar Co., LTD., A-1110)	10	8.7 (Example)

(3) Translation of Page 5, upper left column, line 6 to lower right column, line 16, (Example 1 ~ 6) of JP58-185405

The invention will now be described concretely with examples.

Example 1

20 parts of fumed silica having the specific surface area of 200 m2/g by the BET method, wherein its trade name was "Aerosil 200", was put into a mixer. While stirring at 8,000 r.p.m., 2 parts of γ-amino-propyl-tri-ethoxy silane dissolved to 20 parts of 90 % ethanol, wherein said silane was made by Nippon Unicar Co. Ltd., and its trade name was "A-1100", was added drop by drop with a filler. After completing the dropping, stirring was continued for 3 minutes, and then the obtained powder liquid was poured into a vat and was dried in the oven under nitrogen atmosphere at 110℃ for 1 hour. Ethanol was removed by this heating. The obtained powder was put again into a mixer, and 4 parts of hexa-methyl-silazane dissolved to 16 parts of hexane was dispersed and after that, hexane was removed by the same method as the above-mentioned method. The obtained powder was put into a flask having 1 litter volume, equipped with a reflux condenser, stirrer and thermometer, and was heated 150℃ for 4 hours, under stirring. In the obtained fumed silica, degree of its hydrophobicity was 45 degree and electrostatic charge value was +200 volt at its surface, respectively when measured by later-mentioned test method.

(Following descriptions are omitted)